

Appendix E

Alignment of tobamovirus coat protein sequences

1

TMV-OM	SYSITTPSQFVFLSSAWADPIELINLCTNALGNQFQTQQARTVVQRQFSE
S34858	SYSITTPSQFVFLSSAWADPIELINLCTNALGNQFQTQQARTVVQRQFSE
S34857	SYSITTPSQFVFLSSAWADPIELINLCTNALGNQFQTQQARTVVQRQFSE
S34856	SYSITTPSQFVFLSSAWADPIELINLCTNALGNQFQTQQARTVVQRQFSE
TMV-ER	SYNITTPSQFVFLSSAWADPIELINLCTNALGNQFQTQQARTVVQRQFSE
TMV-06	SYSITTPSHFVFLSSAWADPIELINLCTNALGNQFQTQQARTVVQRQFSE
TMV-vul	SYSITTPSQFVFLSSAWADPIELINLCTNALGNQFQTQQARTVVQRQFSE
TMV-DA	SYSITSPSQFVFLSSVWADPIELINLCTSSSLGNQFQTQQARTTVQQQFSE
ToMV-L	SYSITSPSQFVFLSSVWADPIELINLCTNSLGNQFQTQQARTTVQQQFSE
ToMV-Kr	SYTVSSANQLVYLGSVWADPLELQNLCTNSLGNQFQTQQARTTVQQQFSD
TMGMV	PYTINSPSQFVYLSSAYADPVQLINLCTNALGNQFQTQQARTTVQQQFAD
TMV-OB	PYTVTSPSQLVYFGSVWADPITFIDLCTVALGNQFQTQNRARTTVQQQFSD
PMMV	AYTVSSANQLVYLGSVWADPLELQNLCTNSLGNQFQTQQARTTVQQQFSD
PkMMV	PYTVSSPNQLVYFGSVWADPIALIDLCTVSLGNQFQTQNRARTTVQQQFSD
ORSV	SYTITDPSKLAYLSSAWADPNLINLCTNSLGNQFQTQQARTTVQQQFAD
ORSV-F	SYTITDPSKLAYLSSAWADPNLINLCTNSLGNQFQTQQARTTVQQQFAD
CR-TMV	SYNITNPNQYQYFAAVWAEPI PMLNQCISALSQSYQTQAARDTVRQQFSN
TVCV	SYNITNPNQYQYFAAVWAEPI PMLNQCMSALSQSYQTQAARDTVRQQFSN
RMV	SYNITNSNQYQYFAAVWAEPT PMLNQCVSALSQSYQTQAGRDTVRRQFAN
HRMV.GER	SYNITNSNQYQYFAAVWAEPT PMLNQCVSALSQSYQTQAGRDTVRRQFAN
HRMV.JAP	SYNITNSNQYQYFAAVWAEPT PMLNQCVSALSQSYQTQAGRDTVRRQFAN
WASABI	SYNITNSNQYQYFAAVWAEPI AMLNQCVSALSQSYQTQAARDTVRQQFSN
TMV-CG	SYNITSSNQYQYFAAMWAEPT AMLNQCVSALSQSYQTQAARDTVRQQFSN
CRMV	VYNITSSNQYQYFAAMWAEPT AMLNQCVSALSQSYQTQAARDTVRQQFSN
RMV-SH	VYNITSSNQYQYFAAMWAEPT AMLNQCVSALSQSYQTQAARDTVRQQFSN
RMV-SH	SYNITSSNQYQYFAAMWAEPT AMLNQCVSALSQSYQTQAARDTVRQQFSN
RMV-CAB	SYNITSSNQYQYFAAMWAEPT AMLNQCVSALSQSYQTQAARDTVRQQFSN
CGMMV	AYNPITPSKLIASFASYVPVRTLLNFLVASQGTAFQTQAGRDSFRESLSA
CGMMV-W	AYNPITPSKLIASFASYVPVRTLLNFLVASQGTAFQTQAGRDSFRESLSA
C-CGMMV	SYSTSGIRSLPAFAKSFYFPYDVYNLLVSAQGGALQTQNGKDILRESLTG
CFMMV	SYSTSGIRSLPAYTKSFYFPYALYDLLVSAQGGALQTQNGKDILRDSING
YCGMMV	SYSISSFRSLPAYTKSFYFPFIEFYNLLVSSQGGALQTQNGKDISRESLNG
KGMMV	SYSTSGIRSLPAFAKSFYFPYDVYNLLVSAQGGALQTQNGKDILRESLTG
ZGMMV	PYSTSGIRSLPAFSKSFYFPYLELYNLLITNQGAALQTQNGKDILRESLVG
SHMV	AYSIPTPSQLVYFTENYADYIPFVNRLINARSNSFQTQSGRDELREILIK

50

TMV-OM	VWKPSQVTVRFDPD-SD-FKVYRYNAVLDPLVTALLGAFDTRNRIIEVEN
S34858	VWKPSQVTVRFDPD-SD-FKVYRYNAVLDPLVTALLGAFDTRNRIIDVEN
S34857	VWKPSQVTVRFDPD-SD-FKVYRYNAVLDPLVTALLGAFDTRNRIIDVEN
S34856	VWKPSQVTVRFDPD-SD-FKVYRYNAVLDPLVTALLGAFDTRNRIIDVEN
TMV-ER	VWKPSQVTVRFDPD-RD-FKVYRYNAVLDPLVTALLGAFDTRNRIIEVEN
TMV-06	VWKPSQVTVRFDPD-RD-FKVYRYNAVLDPLVTALLGAFDTRNRIIEVEN
TMV	VWKPSQVTVRFDPD-SD-FKVYRYNAVLDPLVTALLGAFDTRNRIIEVEN
TMV-DA	VWKPFQSTVRFPD-DV-YKVYRYNAVLDPLITALLGTFDTRNRIIEVEN
TOMV-L	VWKPFQSTVRFPD-DV-YKVYRYNAVLDPLITALLGAFDTRNRIIEVEN
TOMV-KR	VWKTIPTATVRFPD-TG-FKVFRYNAVLDPLVSALLGAFDTRNRIIEVEN
TMGMV	AWKPVPSMTVRFPD-SD-FYVYRYNSTLDPLITALLNSFDTRNRIIEVDN
TMV-OB	LFKTVPTRTNRFNDGENGFVFRYNSTLDPLISALMNSFDTRNRIIEVDN
PMMV	VWKTIPTATVRFPD-TG-FKVFRYNAVLDPLVSALLGAFDTRNRIIEVEN
PKMMV	LFKTVPTRTIRFSDGENGFVFRYNSTLDPLITALLNSFDTRNRIIETEN
ORSV	VWQPVPTLTSRFPAGAGYFRVYRDPILDPLITFLMGTFDTRNRIIEVEN
ORSV-F	VWQPVPTLTSRFPAGAGYFRDYRDPILDPLITFLMGTFDTRNRIIEVEN
CR-TMV	LLSAVVAPSQRFPD-TG-SRVYVNSAVIKPLYEALMKSFDTRNRIIETEE
TVCV	LLSAVVTPSQRFPD-TG-SRVYVNSAVIKPLYEALMKSFDTRNRIIETEE

AAB08579 LLSTIVAPNQRFPD-TG-FRVYVNSAVIKPLYEALMKSFDTRNRIIETEE
 HRMV.GER LLSTIVAPNQRFPD-TG-FRVYVNSAVIKPLYEALMKSFDTRNRIIQTEE
 HRMV.JAP LLSTIVAPNQRFPD-TG-FRVYVNSAVIKPLYEALMKSFDTRNRIIETEE
 WASABI LLSAIVTPNQRFPD-TG-YRVYVNSAVLKPLYEALMKSFDTRNRIIETEE
 TMV-CG LLSAIVTPNQRFPD-TG-YRVYVNSAVLKPLYEALMKSFDTRNRIIETEE
 CRMV LLSAIVTPNQRFPD-TG-YRVYVNSAVLKPLYEALMKSFDTRNRIIETEE
 RMV-SH LLSAIVTPNQRFPD-TG-YRVYVNSAVLKPLYEALMKSFDTRNRIIETEE
 AAD56047 LLSAIVTPNQRFPD-TG-YRMYNSAVLKPLYEALMKSFDTRNRIIETEE
 AAD20292 LLSAIVTPNQRFPD-TG-YRVYVNSAVLKPLYEALMKSFDTRNRIIETEE
 CGMMV LPSSVVDINSRFPD-AG-FYAFLNGPVLRPVSVLLSSTDTRNRVIEVVD
 CGMMV-W LPSSVVDINSRFPD-AG-FYAFLNGPVLRPVSVLLSSTDTRNRVIEVVD
 C-CGMMV LLTSVASLNSRFPD-NE-FFVWSRESRIAAIDSLLSALDSRNRAIEVEN
 CFMMV LLTTVASPRSRFPD-EG-FFVWSRESRIAAIDSLLSALDSRNRAIEVEN
 YCGMMV LLTSVASPKSRFPD-GE-AFVWSRESRIAAIDSLLSALDSRNRAIEVEN
 KGMV LLTSVASLNSRFPD-NE-FFVWSRESRIAAIDSLLSALDSRNRAIEVEN
 ZGMV LLSSVASPTSQFPS-GV-FYVWSRESRIAAIDSLFGALDSRNRAIEVEN
 SHMV SQSVSVSPISRFPDPAEPD-YYIYLRDPSISTVYTALLQSTDTRNRVIEVEN

100

TMV-OM QANPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGSYNRSSFESS
 S34858 QANPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGSYNRSSFESSY
 S34857 QANPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGSYNRSSFESS
 S34856 QANPMTAETLDATRRVDDATVAIRSAINNLVVELIRGTGSYNRSSFESS
 TMV-ER QANPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGSYNRSSFESS
 TMV-06 QANPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGSYNRSSFESS
 TMV QANPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGSYNRSSFESS
 TMV-DA QQSPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 TOMV-L QQSPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 TOMV-KR PQNPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 TMGMV QPAPNTTEIVNATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 TMV-OB PANPNTSEVASATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 PMMV PQNPTTAETLDATRRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 PKMMV PANPNTAEIASATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 ORSV PQNPTTTETLDATRRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 ORSV-F PQNPTTTETLDATRRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 CR-TMV ESRPSASEVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 TVCV ESRPSASEVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 AAB0857 9 ESRPSASEVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 HRMV.GER QSRPSASQVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 HRMV.JAP ESRPSASQVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 WASABI ESRPSASEVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 TMV-CG ESRPSASEVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 CRMV ESRPSASEVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 RMV-SH ESRPSASEVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 AAD56047 ESRPSASEVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 AAD20292 ESRPSASEVANATQRVDDATVAIRSAINNLVVELIRGTGLYNQNTFESMS
 CGMMV PSNPPTAESLNAVKTDDASTAAAEIDNLIIESISKGFVDYDRASFEEAF
 CGMMV-W PSNPPTAESLNAVKTDDASTAAAEIDNLIIESISKGFVDYDRASFEEAF
 C-CGMMV PSNPSTGEALNATKRNDASTAAAHNDIPLLLAALNDGVGVFDSASFESAF
 CFMMV PSNPSTGEALNATKRNDASTAAAHNDIPLLLAALNDGVGVFDSASFESAF
 YCGMMV PSNPSTGEALNATKRNDASTAAAHNDIPLLLAALNDGVGVFDSASFESAF
 KGMV PSNPSTGEALNATKRNDASTAAAHNDIPLLLAALNDGVGVFDSASFESAF
 ZGMV PSNPSTGEALNATKRNDASTAAAHNDIPLLLAALNDGVGVFDSASFESAF
 SHMV STNVTTAEQNLAVRRDDASTAAAHNDIPLLLAALNDGVGVFDSASFESAF

150

TMV-OM GLVWNSGPA
 S34858 GLVWTS GPA
 S34857 GLVWTS GPA
 S34856 GLVWTS GPA

TMV-ER	GLVWTS GPA
TMV-06	GLVWTS GPA
TMV	GLVWTS GPA
TMV-DA	GLVWTS APA
TOMV-L	GLVWTS APA
TOMV-KR	GLTWAT TP?
TMGMV	GLVWTT TP A
TMV-OB	NLTWTTTTT
PMMV	GLTWAT TP?
PKMMV	NLTWTTAAT
ORSV	GLTWTSS??
ORSV-F	GLTWTSS??
CR-TMV	-VPWTTAAA
TVCV	-LPWTTAPA
AAB0857	-LPWTTAPA
HRMV.GER	-LPWTTAPA
HRMV.JAP	-LPWTTAPA
WASABI	-IPWATAPA
TMV-CG	-LPWTTAPA
CRMV	-LPWATAPA
RMV-SH	-LPWATAPA
AAD56047	-LPWATAPA
AAD20292	-LPWTTAPA
CGMMV	SVVWSEATT
CGMMV-W	SVVWSEATT
C-CGMMV	GLTWTASAT
CFMMV	GLVWTAASS
YCGMMV	GLTWTASSS
KGMV	GLTWTASAT
ZGMV	GLVWTAGSS
SHMV	GLTWLVTTT

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